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THE
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☞See advertisement on last page.

Poetry.

THE TREASURE SEEKER.

BY GOETHE.

Many weary days I suffered
Sick of heart and poor of purse;
Riches are the greatest blessing—
Poverty the deepest curse!
Till at last to dig a treasure,
Forth I went into the wood—
"Friend! my soul is thine for ever!
And I signed the scroll with blood.

Then I drew the magic circles,
Kindled the mysterious fire,
Placed the herbs and bones in order,
Spoke the incantation dire.
And I sought the buried metal
With a spell of mickle might—
Sought it as my master taught me;
Black and stormy was the night.

And I saw a light appearing
In the distance like a star;
When the midnight hour was tolling,
Came it flashing from afar;
Came it flashing, swift and sudden;
As if fiery wine it were,
Flowing from an open chalice,
Which a beauteous boy did bear.

And he wore a lustrous chaplet,
And his eyes were full of thought,
And he stepp'd into the circle,
With the radiance that he brought.
And he bade me taste the goblet;
And I thought—'It cannot be,
That this boy should be the bearer
Of the demon's gift to me!'

'Tas'e the draught of pure existence,
Sparkling in this golden urn,
And no more with baneful magic
Shalt thou hitherward return.
Do not dig for treasure longer;
Let thy future speed-words be
Days of labour, nights of resting;
So shall peace return to me!'"

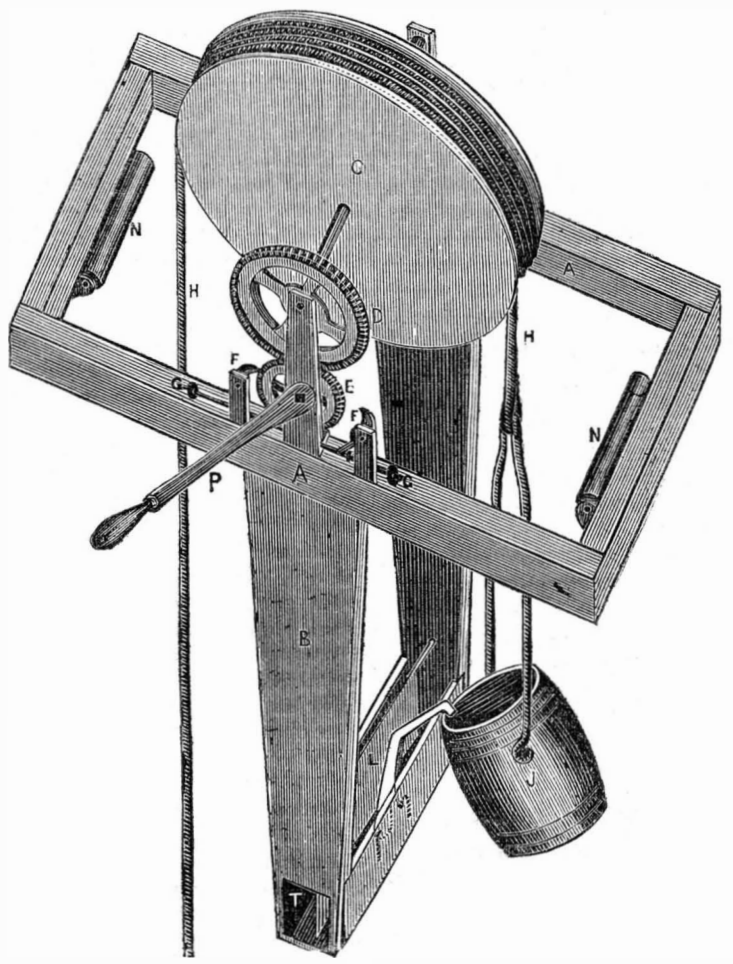
FAITH'S GUIDING STAR.

We find a glory in the smile
That lives in childhood's happy face,
'Ere fearful doubt, or wordly guile,
Have swept away the angel trace.
The ray of promise shineth there,
To tell of better lands afar;
God sends his image pure and fair,
To keep undimmed Faith's guiding star.

We find a glory in the zeal
Of doting breast and toiling brain,
Affection's martyrs still will kneel.
And Song, though famished, pour its strain.
They lure us by a quenchless light,
And point where Joy is holier far;
They shed God's spirit, warm and bright,
And keep undimmed Faith's guiding star.

We muse beside the rolling waves,
We ponder on the grassy hill,
We linger o'er the new-piled graves,
And find that star is shining still,
God, in his great design, hath spread
Unnumbered rays to look afar;
They beam the brightest o'er the dead,
And keep undimmed Faith's guiding star.

VEDDER'S HYDRAULATOR.



This is an apparatus invented by Mr. John I. Vedder of Schenectady, N. Y. and patented on the 24th of October last, so that the patent has the whole fourteen years before it, and it is an improvement on the same kind of apparatus patented by him some years ago.

A A, is a frame erected on the curb of the well. B B, are two side standards the bottom of one communicating with the inside trough by the spout T, through which the water comes. C, is a large grooved pulley, over which the rope H H, passes, to elevate and lower the buckets J, one of which is seen about to be tilted over into the trough, while the other is down in the well. When the bucket J comes up to the trough, it is caught by a crooked arm fixed to the side of the trough so as to bend back a short distance and let the bucket tip over the edge of the trough and be emptied. L is a guard plate placed in the middle of the trough extending across it, to prevent the water splashing over. N N, are two friction pullies on the frame to prevent the rope from being chafed while passing up or down. The pulley is driven by a handle P, which drives a spur wheel E, which meshes into a larger one D. On the pulley shaft F F, are two hook bill palls fixed in two standards by pivots and secured at the other ends to a rod G G. These palls are for the purpose of catching into the teeth of E so as to allow the buckets to move up and down, and yet to hold the bucket at any point desired, pushing G backwards and forwards, to throw one pall in and the other out of gear with E as may be required. This prevents the crank from being turned the wrong way and there is no danger of the buckets filled with water dropping down into the well again, even if a child is operating the handle P. The guard plates in the centre of the trough prevent the water from splashing and wetting the rope on the other side, and it is therefore a good improvement to render the well rope more enduring. This engraving presents the apparatus in such a view that all the parts will be distinctly understood.

More information may be obtained by addressing the inventor, post paid.

Origin of "True Blue."

Every body has heard and made use of the phrase "true blue;" but every body does not know that its first assumption was by the Covenanters, in opposition to the scarlet badge of Charles I; and hence it was taken by the troops of Lesley and Mortrose, in 1739. The adoption of the color was one of those religious pedantries in which the Covenanters affected a pharisaical observance of the Scriptural letter, and the usages of the Hebrews; and thus, as they named their children Habakkuk and Zerubbabel, and their chapels Zion and Ebenezer, they decorated their persons with blue ribbons, because the following sumptuary precept was given in the law of Moses: "Speak to the children of Israel, and tell them to make to themselves fringes on the borders of their garments, putting in them *ribbons of blue*." Numbers xv. 38.

Cannel Coal.

We learn that very extensive mines of this valuable mineral have recently been discovered on Coal River, in the county of Kanawha, Va. They spread over five or six miles square—and the vein varies from three to ten feet in thickness. From some indications it is not improbable that an entire mountain is solid coal. Last year a mine of the same species of coal was discovered not very far from the same place. The coal is the perfection of all coal—and until the discovery of these two mines, we believe no others were known except a few small ones in England.

The cause of the accident to the steamship Great Britain, according to late English papers, has been satisfactorily ascertained to have been the derangement of the compass by the iron of the vessel!!!

RAIL ROAD NEWS.

The New York and Montreal Railroad line having been opened on Monday last, from Saratoga to Whitehall, travellers during the coming winter will be enabled to start from Whitehall in the morning and arrive in New York, via Troy and New Haven and New York Railroad, by ten o'clock, P. M., or before.

Railroad to the Pacific.

Messrs. Howland and Aspinwall the great shipping merchants of this city have petitioned Congress for assistance to construct a Railroad across the isthmus of Panama. The petition has met with encouragement and at present all idea of Whitney's Railroad to Oregon seems to be out of the question. California and the Bay of San Francisco seems to be the climax of a railroad to the Pacific at present.

Railroads in Ohio.

The Statesman says "the State of Ohio has now, either completed or commenced, 515 miles of railroad, which, when finished, will use over 38,000 tons of railroad iron."

Canal to the Pacific.

We see by the N. O. Commercial Bulletin, that the English house of Manning & Mackintosh have obtained control of the Mexican route to the Pacific, at the isthmus of Tehuantepec, and already commenced preliminary operations for making the canal. And so, very well, but we can beat that, and must do it. Uncle Sam must now set to work and build a railroad, and that he will not soon do it, "who's afraid."

Coast Survey.

The Report of the Superintendent of the Coast Survey, submitted to Congress on Tuesday week last shows that since 1844 there has been covered by the triangulation 17,555 square miles; by the topographical surveys with the plane table 2,318 miles, and an extent of shore line and roads of 7,179 miles; and by the soundings 20,086 square miles, of which 16,824 were principally off-shore or deep-sea work. This work has been done in the following States: Maine, New-Hampshire, Massachusetts, Rhode Island, Connecticut, New-York, New-Jersey, Pennsylvania, Delaware, Maryland, Virginia, North-Carolina, South-Carolina, Georgia, Alabama, Mississippi, Louisiana and Texas.

Curiosities from the Holy Land.

Lieutenant Lynch has brought home with him a number of specimens of the water of the Dead Sea, the River Jordan, and the Pool of Siloah; and fragments of the pillar of salt into which Lot's wife was transformed, as a punishment for her disobedience to the command of the Almighty.

In regard to this last, we are informed that the pillar from which it was taken rises nearly forty feet high, stands exactly in the spot designated by the Bible, and that Lieut. Lynch, the commander of the Dead Sea Expedition, expresses the confident opinion that it is the representative of what was Lot's wife. We believe it has not been seen before for many centuries. Josephus records its existence.

There are many other curiosities on board the Supply—as an Egyptain mummy, a pair of the cattle of Arabia, rosaries made of wood from the Holy Mount, shells from the shores of the Dead Sea, gazelles, &c.

Cotton Consumption in the United States.

From an article in the New York Dry Goods Reporter we learn that the cotton consumed in the United States during 1847-8 was not far from 480,000 bales, employing $80,357,130 capital, 101,260 operatives, 3,012,500 spindles, and distributing weekly in wages $363,-214, or $18,887,128 per annum, and for all expense, not including cotton, $491,785 weekly or $55,562,820 annually. This interest produces 755,000,000 yards of goods, or 47½ yards to each individual.

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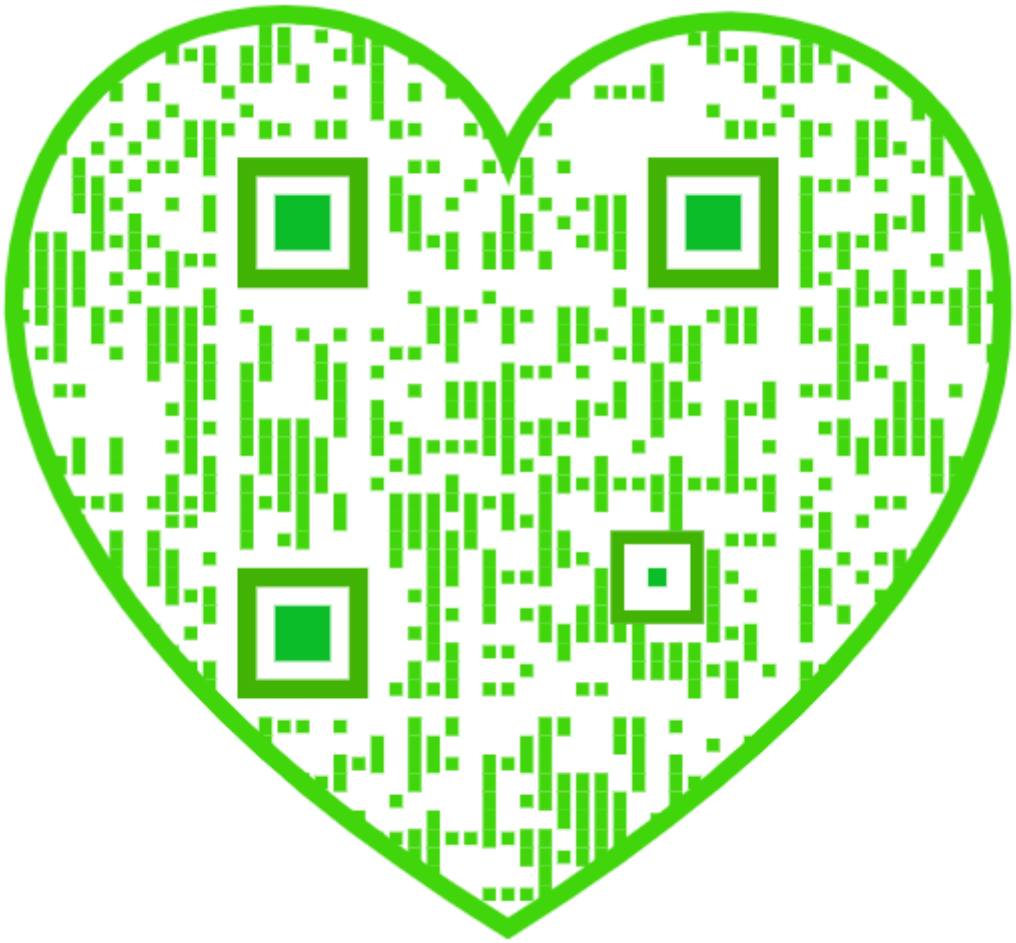

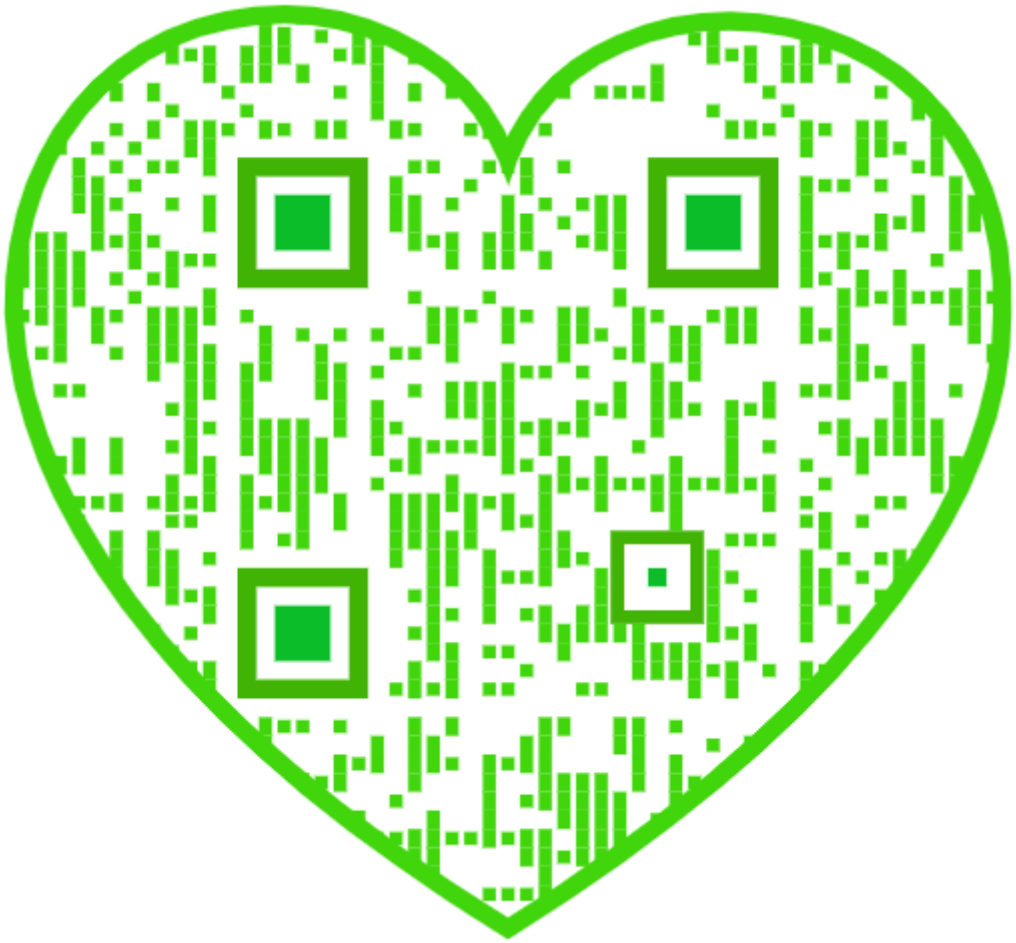

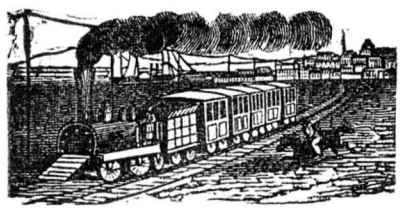

The Golden Land.

The golden mania is still raging in our goodly city. Recent accounts from California throw the Government reports all in the shade. No less than a country of 12,000 square miles is said to be all shining with the yellow sands. Some have wanted us to go and teach the gold gatherers the way to pick it up scientifically as the fellows have got to be perfect heathens in turning up their noses at small pickings, but like Paul, we will abide by the good old ship.

Next week we will give some practical directions to those who are bound for the "Golden Land."

The Cholera.

The cholera has scarcely created the least sensation in our City and is on the decrease at the Hospital. It may be said never to have entered our city. There are two kinds of cholera, the ordinary and malignant. The malignant is what is termed the Asiatic cholera and tends to depress the vital powers and produce death. It appears to be both infectious as well as an epidemic.

The characteristic symptoms of the disease, are purging, sickness, vomiting and pain, and either of these may occur before the rest.

When the disease begins in the lower bowels without much pain, it may be carried off by draught, repeated several times if necessary viz. tincture of Rhubarb, 2 or 3 spoonfuls—tincture of ginger or essence of peppermint, half a tea spoonful—tincture of opium 10 or 20 drops with a little syrup, or sugar and water, the whole not exceeding an ounce and a half. If the pain is very violent the same dose should be doubled with 4 tea spoonfuls of the tincture of catechu, with a little prepared chalk mixed in the syrup, with the addition of a little gum water. When the disease sets in violently—no time must be lost—the patient must be put to bed and covered with warm blankets and bottles with warm water, and flannels dipped in warm water applied to the stomach and repeated while the coldness and pain continues. The following liniment should then be rubbed over the pained parts,—four or five parts of the tincture of soap and opium, two parts of camphorated oils and two of spirits of hartshorn of the ordinary strength. In twenty minutes, or half an hour warmth is generally felt and the pulsations of the heart and arteries generally become more full. Tincture of opium must be used if the above liniment cannot be obtained. While the inclination to vomit continues little drink should be taken, and that little about every half hour, made up of two teaspoonsful of the tincture of rhubarb, half a teaspoonful of ginger and 15 drops of the tincture of opium. In the stage of the greatest depression, stimulants are the only means to be depended on, and these should be used with the greatest care. Castor oil, next to rhubarb, is the mildest purgative, when it can be retained on the stomach.

San Francisco.

The population of San Francisco, California, in July last, was 5000 souls. The Goverment troops and passengers who have since gone out and are going, will swell the number by June next to 9000. More dry goods have been shipped to that region since the gold fever, than could be made up in clothing in a year if all the inhabitants were tailors. Ready made clothing has been sent in the same proportion, and of broadcloths sufficient have gone to clothe all in the country for five years to come. The Journal of Commerce advises that the emigrant to California, if he has any money, should take it with him in half dollars, and when there, purchase what he may want (which will be very little in the shape of clothing) to enable him to dig gold in summer

Did you ever hear an orator who had'nt to add "just one word."

LITERARY NOTICES.

The Gold Mines of California.

We have now for sale a very interesting work bearing the above title, with a Map of the Gold Region and a historical view of that rich country. The information is derived from official documents and other authentic sources, making a volume of nearly 100 pages. Send your orders, post paid, to Munn & Co., and they shall receive prompt attention—price 25 cents.

California.

Mr. H. S. Tanner, No. 156 Fulton st., has laid upon our table a new Map of California and New Mexico, showing the boundaries according to the last treaty, and the location of the Gold regions, with a supplementary Map of North America, delineating the whole route by land and sea to San Francisco, with a table of distances, &c., carefully compiled from authentic sources. We have carefully examined it and do not hesitate in pronouncing it not only valuable to those anticipating going there, but useful to every individual desiring a knowledge of the newly acquired territory.

Godey's Lady's Book.

The January number of this splendid monthly has appeared upon our table and is truly the richest number of any Magazine we ever saw. The "dawn of love" a beautiful mezotint appears as the first engraving and the "Tableaux of life" drawn and engraved by Tucker as the second. The latter is a splendid engraving and is well worth the price of a years subscription and could not be bought of us for that price were it not possible to procure another. It does the designer of it credit and is an honor to the publishers. The present number of Godey's commences a new volume and we can do no more than to advise every one that desires a beautiful work to subscribe for it. Published by L. A. Godey Philadelphia, at $3 per annum and may be had of Long & Brother, 46 Ann st. New York.

Pictorial National Library.

This very excellent periodical has made its monthly call again and is teeming with interesting matter as usual. It is truly a National work, as its title indicates it to be, being composed of American tales and events, besides the engravings are American views exclusively. Published by William Simonds & Co., Boston, and may be had of G. W. Adriance, 177 Bowery, this city.

The Student of Salamanca.

We do not besitate in pronouncing this one of the most thrilling and interesting tales ever published. It conveys to the reader many important facts connected with the Carlist war in Spain and is written in a clear, graphic, and powerful style. The reader could scarcely lay aside such a work without feeling benefitted and interested. Published by H. Long & Brother, 46 Ann st. Price 25 cents.

Mrs. Gore's New Novel, Castles in the Air.

Mrs. Gore is truly one of the clearest and most vigorous writers of the present day, and we must confess that she has amply illustrated her powers in her new novel. We promise for all who read it a rich entertainment. It is published by H. Long & Brother, 46 Ann st. Price 25 cents.

Angelina Luxmore or the Life of a Beauty.

From a hasty perusal of the above story, we are disposed to recommend it as one of uncommon interest. It is written in fine taste, and combines numerous and profitable advise to mothers. The narrative is exceedingly well developed. Published by H. Long & Brother 46 Ann st. Price 25 cents.

Smithsonian Institute.

The Board of Regents of the Smithsonian Institution met on Wednesday week last at the room of the President of the United States, (in the Capitol,) and immediately adjourned to Monday next, in order to give the newly re-elected members, Messrs. Choate and Hawley, an opportunity of attending the first business meeting. The above named gentlemen were advised by telegraph of their re-election.

A pipe of cast iron 14 inches in diameter and three-fourths of an inch thick, will sustain a head of water of 600 feet. One of oak, 2 inches thick and of the same diameter, will sustain a head of 180 feet.

Scientific American.

This journal, although not ranking as a Magazine, is nevertheless, one of the very best and valuable publications of the country. It is published in the city of New York, by Munn & Co, at $2,00 per annum.—Every number is embellished with a large number of well executed engravings, illustrative of late inventions or works of mechanism; and, judging from this department alone, it is quite evident that the proprietors of the paper are at great expense. We know not how many subscribers to the Scientific American there are in Washington county; but we do know that it ought to be in the hands of every Mechanic and scientific man in the community. Frequently as we have called attention to the great value of this journal, we still feel inclined to say more than ever in behalf of it and urge it more strongly upon the patronage of the intelligent people of Washington county. Any person desiring to see copies, may do so by calling at our office, and any information desired by those wishing to subscribe will be cheerfully granted by us, so far as we are able.

[The above generous and unsolicited compliment to the Scientific American is copied from the "Examiner" published at Washington, Pa. For which the Editor will please accept our hearty thanks, and best wishes. We are now publishing the 4th volume of our Journal and have no reason to complain of the generous support it has received from the industrious and intelligent mechanics of the country. To say we have not been benefitted by the spontaneous testimonials of the Press generally would be ungrateful, for it is impossible to deny that our efforts have been brought into notice in a great measure by such flattering recommendations. We now circulate between 11 and 12,000 copies weekly, and our readers may rest assured that no expense shall be spared on our part to render the Scientific American instructive and interesting.

The worst wish we have for the Examiner is that its circulation may extend to twice our number, and judging from the manner in which it is conducted we shall be surprised to hear that any family in the county is without this pleasant companion.

Great Vintage in France.

The Courier des Etats Unis, of this city says "Never was the vintage so abundant as it has been in 1848. In all the vine-growing districts in France there is a deficiency of casks for pressing the grapes. In Bearn it is so difficult to gather in the crop on account of its abundance, that the attempt has been abandoned. In many vineyards the mules are allowed to eat it; and at Luresnes, several wine growers, desirous of emptying their cellars, have put up the following notice outside their houses:

"Wine at will—drinking here at a penny an hour"

In the neighborhood of Paris, also, the crop has been so enormous that the peasants dare no longer bring their grapes into the city for sale. The disposal of them wholesale would be uncertain, and they would incur the municipal tax of six centimes per kilogram. In consequence of this a species of grape-fair has been established outside several of the market barriers. On one occasion, lately, the whole camp of the Champs Elysees turned out to buy their provisions, and re-entered together, each man carrying a kilogram and a half, three pounds weight, which is the quantity allowed to be brought in duty free. They had the air of returning from a marauding expedition.

Good Recomdation.

Mr. Walker, Secretary of she Treasury, proposes to take off all duties on the trade between Canada and the United States, and also to establish international free trade with Mexico He also proposes to reduce the price on public lands to 25 cents an acre.

We should like to see free trade with the whole of the American Continent, and this will yet be when they are all gradually merged in one great federal compact for the good of the whole.

Tke bill before the Vermont Legislature to exempt homesteads from attachment has been defeated in the House—86 to 80.

A New Way to Cut a Channel.

The Pensacola Gazette says that until a year or two since, "a lagoon extending from the entrance of our harbor to within half a mile of the Perdiod Bay, a distance of eight or ten miles, had an entrance into our bay, at a point near the residence of Major Chase, the channel at one time admitting vessels drawing seven and eight feet, and all the vessels laden with brick for the building at Fort McRae passed through this channel into the lagoon to discharge their cargoes. By the action of the surf rolling in from the ocean, the entrance was gradually closed. Thus the lagoon remained for three months, constantly receiving accessions from the little streams making into it, until it was two or three feet above the level of the bay and sea. At this time a young man residing in the neighborhood, "just for the fun of the thing," cut a little ditch through the sand at a low point near the fort, when the water commenced running, and in a few hours it was cutting away everything before it, and in a day or two there was a channel of more than a hundred yards wide, and in the deepest place, twelve or fourteen feet. The channel has ever since been encroaching upon the fort, and a few months since began to wash its base. Major Chase, seeing that the beautiful fort that had been erected under his supervision at a cost, probably, of a million of dollars, was in danger of being blown up by an unexpected enemy, and knowing that the structure rested upon a sandy foundation, turned his attention to stopping the breach, and used a number of methods; but all failed, until the happy expedient suggested itself of procuring some 20,000 corn sacks, which were filled with sand, sewed up and tumbled into the channel, and in a short time the water was successfully stopped and the fort saved. The Major is now endeavoring to divert the water into another channel but at a point where the fort is not in such dangerous proximity."

Singular Affair.

Some two weeks since a merchant in Bangor, Me, in emptying a tea chest, found in the bottom a snuff box containing a five dollar bill on the Dover, N. H. Bank, and attached to it, the following epistle written on a piece of paper of the quality generally used by the Chinese in putting up tea in pound packages.

PEKIN, Dec. 1846.

Dear Mother—I am a prisoner in a Tea House, and have been for six years. I wish you would go to Washington and get our government to interfere and obtain my release. I enclose you a five dollor note; it was presented to me by an American gentleman; it is of no use to me, but it may be to you.

EDWARD LOVELL.

Directed to Mrs. Nancy Lovell, Boston, Mass.

Miss Marietta Smith, the young lady who caused so many stories to be circulated about abduction and so on, has at last been found.—She ran away from this city and went to Boston to learn the trade of a milliner. She has displayed but little sense or affection, or she would have in some manner let her parents know that she was *free*, and well.

A young lawyer having been asked by a judge whether in the transmigration of souls he would prefer being turned into a horse or an ass? An ass, quickly replied the lawyer. Why, says the judge? Because I have heard of an ass being a judge, but never a horse, was the reply.

A cow that broke her leg in England recently, was supplied with a wooden one, and strange to tell, in two months she became exceedingly expert in the use of it, by crippling on her three and one and thumping her neighbors.

The value of domestics exported from Boston since January has been $1,983,106 63, an increase of 11,400 bales and cases from same time last year.

The state of Missouri is about to construct a levee along the west bank of the Mississippi from New-Madison, to the state line of Arkansas, a distance of fifty-four miles.

The Ohio Penitentiary is lighted with gas. It enables the prisoners to read good books during the long evenings, after the labors of the day are over.

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Artists of the Ideal and the Real; or, Poets and Inventors—Revival of an old modeof Carving.

BY THOMAS EWBANK.

The following article, which appeared in the Tribune two weeks ago, and now revised for the Scientific American will be read with no little interest by all our subscribers.

Every one has more or less of the Poet in him—even animals, it is believed, have their pleasures of imagination. The enviable appellative has been exclusively given to one class of men; yet it is equally applicable to another viz: Inventors. What is Poetry but the art of Invention? And what an Inventor but one who brings that into being which had no previous existence? And is there not poetry in things as well as thoughts? in forms, motions and results? Why! there is no species of metrical composition and no flights of genius in them that have not counterparts in tangible creations! Authors of verse and of mechanical novelties are, then, both children of inspiration, and differ only in the media of its manifestation. Appointed to separate missions, one occupies regions of the Ideal, the other realms of Realities. One portrays—the other goes farther and produces that which he imagines. The former reveals his conceptions in words—the latter casts them in iron and brass, or embodies them in other material, according to their natures, and then places them, instead of their pictures before us. Like his more etherialized brother, he indulges considerably in light and fugitive pieces, but every now and then rouses the world with specimens of sublimity and romance, as the Printing Press, Steam Moters, Telegraphs, Water and Land Locomotives, and other heroic poems in wood and metal avouch! And where's the soul so torpid that is not warmed into raptures by persuing them!

Both have their season of exaltation and prostration—spiritual intermittents. Their general feeling and fates are alike. As regards wordly honor and wealth they are commonly on a par—poor in possession and amazingly rich in expectation. Allied so intimately in their pursuits and destinies, their hopes, joys, sympathies and sorrows, a mutual attachment might be expected to bind them together; but such has not always been the case. The amateur of tropes used to look askant at him whose metaphors were springs and pulleys, but the feeling is yielding to a better one. The artist of realities is not now deemed 'mean' and 'servile,' nor his profession 'ignoble' and 'scandalous'*—that is, except where rulers reign *jure divino*, for then people are ever slaves *de facto*.

There is no mistake about the pleasures of inventors. They have joys that common minds know little of. They live in a world and breathe an atmosphere peculiarly their own. Each one carries with him a magic elixir that enables him to rise into higher cycles than common mortals move in. Like those of other men, their bodies are seen in our shops and thoroughfares, but their souls, even then, are often soaring elsewhere, and sometimes become so perfectly abstracted that, one would think, Death might snatch the former away and leave the latter unconscious of their departure to wander about in quest of them.

A virgin thought flashes on them, or a long attempted problem is solved, and they are in a delirium of delight. Their pallid cheeks become flushed with joy, and their eyes expand in ecstacy. The new ideas or facts disclosed are not verily apples of gold in pictures of silver. They are about to receive their reward, and Hope, in her richest robes, steps in to reveal it. Waving her wand, she calls up mansions, lawns and equipages, bank books certificates of stocks, rent-rolls, and a long list, of other desirable miscellanea! Nor is the vision always evanescent. Frequently it endures till it 'come to pass,' or the smiling visionaire himself pass away. In either case the enjoyment is genuine—anticipation, as is well-known, being not one whit less exquisite than fulfilment.

Sometimes the lives of a Fitch and Chatterton have become extinguished with the scenes but only when they were unusually vivid and abruptly dissolved.

Verbal poets occasionally find their finest images forestalled—already in the book market a like thing occurs, and not seldom neither, with inventors. Many a one has unwittingly given birth (a second one) to the child of another, cherished it with paternal solicitude and honestly ushered it into the world as his own! An unlucky contretemps truly! To undergo the labor of mental gestation, suffer the throes of giving it birth, and then have the darling torn from you by a stranger! Yea, and perhaps with the taunting remark that all other eggs in your brain had been laid by his maggots! (But that is bordering on a theme more exciting than the Quarrel of Authors.) Ten to one, if the unfeeling claimant had any right to the paternity, but had abandoned and would never have thought of acknowledging it but for its improved appearance and condition. Probably it had not lived but for its foster-parent's care.

Nothing but a careful examination and re-examination of the registers before undertaking to own and nurse such youuglings, can enable any one to avoid such disappointments.

Recently, a novel mode of carving in wood, by first sinking the parts designed to be in relief, was announced. Unfortunately for its author, some unknown meddling person tampered with it long ago, when little could be made out of it either for himself or others. There could have been no harm in this had he done nothing more, but he impertinently filed a caveat in the public's archives. He cannot, however, appear in person to charge the reviver with kidnapping, nor yet apply for a quo warranto or injunction. Here's his declaration.

An excellent Receipt to make a dainty, streight Walking-Staff, and to have knots where you please.—Get a streight piece of wood of the length you desire, of holly, ash, service-tree, walnut-tree or pear-tree; let it be free from knots, then plane into six or eight sides, a good deal bigger than your staff is to be. This done, get a short punch of iron and let the small end be filed to about the bigness that you intend your knobs shall be where you will have knobs, punch holes with a hammer therein, and so do on every side.—Then plane it over again till you have made the staff smooth that there be no dots [left by the punch] seen thereon. Next put it into a caldron of boiling water for a good space, and when you take it out, you shall see that it will be full of knobs, for by the heat of the water the bruises made by the punch are swelled out again.

You may file your punch like a star or other work [design] and it will show very pret ty. I once saw a partisans or captain's leading-staff done in this manner, and being put into a dyer's caldron when he dyed blacks, and dried and rubbed well with linseed oil, it showed [shone] like ebony.—*A Rich Cabinet, with variety of inventions unlocked and opened for the recreation of Ingenious Spirits, &c. &c. Collected out of Alexis Mizaldus, Wecker, &c. By John White, a lover of Artificial Conclusions. Fifth Ed. Lon.* 1684.

* See Moxon's Preface to 'Mechanick Exercises'—London 1693, and any English Dictionary to Walker's inclusive.

The City of Bumbay East Indies.

Bombay contains a population of above three hundred thousand inhabitants, a large proportion of whom are Hindoos—the remainder are Mahomedans, Armenians, Jews, and about 8000 Parsees, or fire worshippers. The houses of of the Parsees, many of whom are wealthy, are often of great extent; because, if a man has many sons, they all continue to live under the same roof, even when married—with their families, and uncles, aunts, brothers, sisters, sons, daughters, and grandchildren, and remain together till the increase of numbers actually compels a portion of the family to remove, and to erect new dwellings for their own accomodation. The lower classes content themselves with small huts, mostly of clay, with the roofs made of the leaves Palmyra or cocoanut trees.

Many people will be surprised to learn that the worshippers of fire still exist in the East, but they are still numerous in the Indian Archipelego, when many of them found refuge from the relentless Mahomedan.

Cultivation of Indigo.

Among dyers and color makers, the Bengal indigo is highest prized. It is far superior to any other kind. The Guitamala or South American is the next in quality, and then the various grades of Spanish float, &c. The best Bengal sells for $2 per pound and it is a great source of revenue to the British Government. As this is at present the most valuable of all the dye drugs, selling for more than cochineal, the United States must consume more and more of it, as we increase in manufactures. The cultivation of the indigo plant should therefore arrest the attention of our Southern planters, as there can be no doubt of an open and ready sale at all times, if the quality is good. We say this because some may say that "there is not a good market for what is now made in the States," that which is raised in Louisiana and S. Carolina. But the reason of the American indigo being unsaleable in the market, is owing to its inferior quality. It is far easier to work, as it is called, a good than a bad quality of indigo. In making the sulphate of indigo, the inferior requires more sulphric acid than the superior quality, while it does not yield one fourth the amount of coloring matter, and the labor to use them both is the same. It is therefore of the utmost consequence to pay attention and particular attention to the quality. Bengal exports more than eight million of pounds every year and the quality has been, steadily increasing. Indigo succeeds best near the tropics, where the mean temperature reaches 75° and 80° Fahrenheit. The soil should be light and rich. Sow in April 12 lbs. to the acre, in drills 15 to 20 inches apart. Moisture is requisite but undrained soil should be avoided—to be kept free from weeds and grass and thinned by hoeing. Cut with a reaping hook near the ground, when about the flower, or so soon as the lower leaves begin to turn: this period will be in July in South Carolina. A second crop is cut at the end of August, and a third in Guatimala and India. The first crop is the best. The excellence of indigo depends upon the brightness of the season—wet wether produces large plants, but a small quantity of coloring matter.

The culture is very precarious, both as regards the growth of the plant from year to year and the quantity and quality of the drug, even in the same season. Good indigo is known by its lightness or small specific gravity, indicating the absence of earthly impurities—by not readily parting with its coloring matter when a mass is drawn over a white surface; but above all, by the purity of the color itself.

In the Delta of the Ganges, where the best and largest quantity of indigo is produced, the plant lasts for only a single season, being destroyed by the periodical inundations; but in the dry central and western provinces, one or two rattoon crops are obtained.

In South Carolina the following method is employed to extract the indigo from the plant, which answers well enough for domestic purposes, but it is time that greater attention was paid to the manufacture of a better article.

When the underbearers begin to dry, they are cut down and put into a barrel filled with rain water with boards and weights placed on them to keep them under water.

When bubbles begin to form on the top and the water begins to look of a reddish color, it is soaked enough, and must be taken out, taking care to wring and squeeze the leaves well, so as to obtain all the strength of the plant; it must then be churned (which may be done by means of a tolerable open basket, with a handle to raise it up and down) until the liquor is quite in a foam. To ascertain whether it is done enough a spoonful is taken out on a plate, and a small quantity of very strong lye put into it.

If the liquor curdles, it is a sign that it is churned enough, when potash lye of considerable strength is added by small quantities and the churning continued until it is all sufficiently curdled; care must be taken not to put in too much lye, as that will spoil it. When it curdles freely with the lye, it must be sprinkled well over the top with oil, which immediately causes the foam to subside, after which it must stand till the indigo settles to the bottom of the barrel. This may be discovered by the appearance of water, which must be let off gradually by boring holes first near the top, and afterwards lower, as it continues to settle. When the water is all let off, and nothing remains but the mud, it is taken and put into a funnel bag, and hung up to drip, afterwards spreading it to dry on large dishes. None of the foam, which is the strength of the weed, should escape.

Hindoo Cavern Temple.

At Bombay, in the East Indies, there are interesting excavations named the Elephanta a name given by the Portuguese from a huge stone elephant found at the landing place. It is carved out of the solid rock on which it stands, but is now much broken and mutilated. The hewn entrance to the cave is from forty to fifty feet wide, and its height about twenty feet. It is supported by large columns carved from the solid rock. The sides of the cavern are ornamented with numerous figures, but the lower end of the cavern, opposite the entrance, is the most remarkable. In the centre is a God of colossal size, with three heads, representing the Destroyer, Giver and Preserver—these are decked with various ornaments. The features are all very good, with the exception of the under lip, which is amazingly thick. The length from the chin to the top of the head is about seven feet.

The parts of the figures are all perfect, with the exception of the two hands which are destroyed. On each side of the tri-headed god are two statues, about fifteen feet high, leaning on a dwarf; these are much defaced. To the right is a sculptured group, embracing a variety of figures, the largest of which is sixteen feet high.—It is a double statue, half male and half female, with four hands. Another portion of this design is filled with small figures in attitudes of worship, well executed. The columns and various portions of the sculpture have been much defaced by the Portuguese, in former times, when they made war upon the gods and temples, as well as upon the native inhabitants. No trace of the history of these caverns remains; their origin is unknown. They are supposed to be about two thousand years old, and must have been the work of a people far advanced in the arts.

Female Inquisitiveness Served Out.

The Roman Senators were in the habit of bringing into the senate their sons who had taken the Protexta, but they were enjoined not to divulge the secrets of an adjourned debate until it was concluded. The mother of young Papirius, who had accompanied his father to the senate house, inquired of her son what the senators had been doing. His silence inflamed her curiosity, and importunity at last drove him to the following pleasant fallacy to get rid of it. He told her that it was discussed which would be more beneficial to the state, for one man to have two wives or one woman two husbands? As soon as she heard this she left the house in great trepidation, and hastened to tell the other matrons what she had heard. The next day troops of matrons went to the senate and with tears and entreaties, implored that one woman might be allowed to have two husbands rather than one man be permitted to have two wives.—The senators were astonished at this interminate proceeding of their wives, and wondered what they could mean. Young Papirius soon explained the pardonable fallacy perpetrated and thus solved the puzzle presented to the senate. Delighted with the honour and ingenuity of the youth, the senate decreed that from that time no youth should be suffered to enter the senate, Papirius alone excepted. His discretion gained for him the cognomen of Pratextatus.

Real Wealth vs. Money.

Pitt carried the British nation through thirty years' war, and left it richer than he found it. He died poor, and was buried at the nation's expense. Peel carried the British nation through thirty year's peace, and left it poorer (taking the condition of the people as the test) than he found it. He will die worth millions of money, (for it is presumed he understands the working of his own system) and will be buried amid the execration of the people. Pitt's system was paper money Peel's system gold money."

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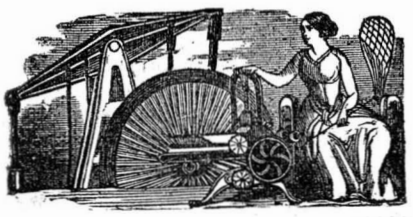


New Inventions.

Archimidean Water Wheel.

Mr. M. L. Davis, of Danville, Livingston county, this State, has made a valuable improvement on a water wheel, whereby he gets a wheel of great power to occupy a small diadiametrical space. It is called the Archimidean Water Wheel, from the fact that the buckets are of a spiral form extending from the top to the bottom, and around an iron cylinder forming part of the same. It is constructed to extend nearly the height of the fall, so that no case is required, as it is both case and wheel of itself, therefore it need be of no great diameter, as the water exerts its power during the whole descent in the spiral buckets, inversely, on the principle of Whitlaw and Stirrat's.

Improved Road Scraper.

Messrs. C. Schofield and G. J. Johns, of Albion, Illinois, have made a very useful improvement on a Scraper for making and repairing common roads, which should be adopted and employed by all our farmers in every township. It is especially useful for new settlements. The improvement consists in combining the *scoop* with a plough and having the scoop fixed to the standard by a swivel joint, so that by a catch lever connected with it, the scoop can be emptied with the greatest ease without tumbling over the scoop, which has to be done with the scrapers at present in use.

Improvement in Wool Spinning.

The Maine Farmer states that Messrs. W. C. Bates & S. T. Tucker of that State have made a valuable improvement in the spinning of wool whereby the roping can be taken directly from the cards, drawn and twisted by one operation. The yarn is also smoother and more evenly drawn by the new machine, than by the "jacks."

The invention is called "the revolving draft wool spinner." It is attached to the carding machine and is a most beautiful combination saving both room and expense.

Improvements on Windmills.

Mr. Charles B. Hutchinson of Waterloo, Seneca Co. N. Y, has recently made some valuable improvements on windmills both for self regulating and reefing the sails. A common governor is used for the regulating of the angle of the sails to the wind, but this is employed in a most judicious and novel manner, for retaining the ends of the booms in slot when necessary, at an angle reverse to the allowing of the sails to present the square of their surfaces to the blast. This mode of self regulation has been completely successful in practice during the most fitful windy days of this autumn.

Patent Safety Bridle.

Mr. Henry Seitz of Marietta, Lancaster Co. Pa., is the inventor of a very ingenious Bridle for which letters patent were recently granted, whereby it is impossible for the most spirited horse to kick or run away, and perfectly safe for a lady to drive or ride. The principle on which it is constructed is to hold the horse by the application of a pulley around which the reins are made to pass at the side of the horse's mouth, which enables the rider to exert a great deal of lever power to control the mouth of the animal, to check him at any moment. We consider this a very useful improvement, as with some horses especially when they are young, the old curb when pulled makes them to rear and pitch to the great danger of the rider. This bridle effectually remedies this evil.

Reaping Machines.

It is stated in the Prairie Farmer that Reaping Machines which were used on the prairies last fall, did their work much cleaner than by cradling.

HUBBELL'S PATENT FIRE ARMS.

We present this week an engraving of the improved Fire Arms invented by William W. Hubbell, of the city of Philadelphia, in 1844, and secured to him by letters patent. There have been many enquiries made about these fire arms and their qualities, and the beauty of the invention is but too little known throughout our country—although they have carried terror to the foe on the banks of the Rio Grande, on the heights of Cherubusco and Chapultepec.

DESCRIPTION.—The nature of this invention consists in detaching so much of the breech end of the barrel as will contain the charge from the main part of the Barrel, by having it to flap over to one side of the barrel on a rod as its centre, which runs parallel with the Barrel, and thus expose itself to receive the charge, after receiving which, it is flapped back to discharge its load through the main part of the Barrel; and is for all kinds of Fire-Arms.

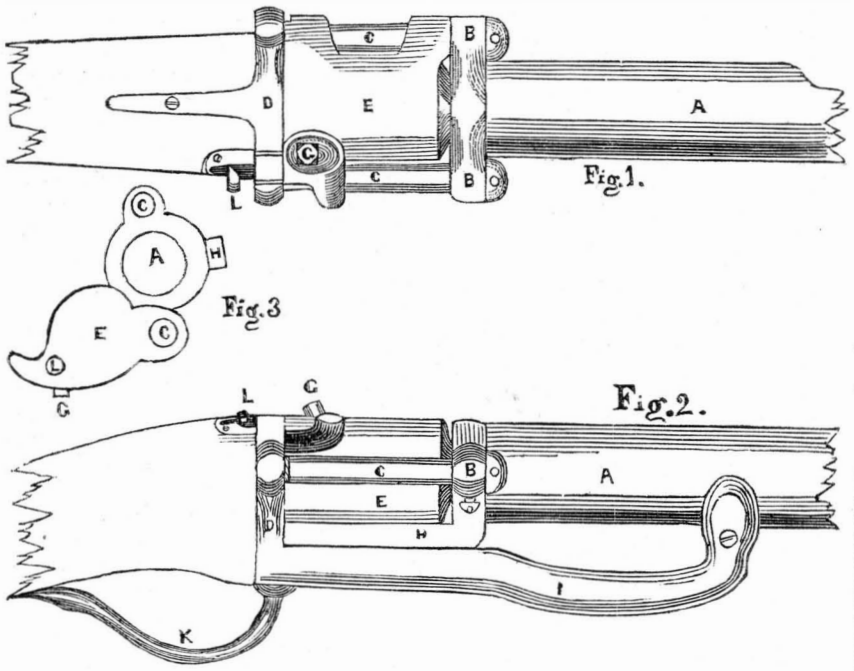


Fig. 1. is a perspective view of the upper part of the Breech. To the sides of the back part of the main barrel A, there are two ears B B, through which two rods C C, pass, and are secured to a breech plate D, which receives the recoil end of the breech E which contains the load, and which opens on the left hand rod as its centre—the right hand rod acting as its correspondent, both serving the purpose of bracing the main barrel to the breech plate, having the breech between them; there is a percussion tube G, on the back end of the breech to fire the charge from.

Fig. 2. is a perspective side view, similar letters referring to the same parts as in Fig. 1.

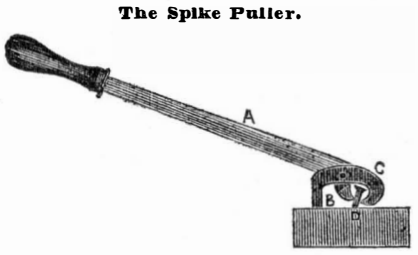
To regulate the calibre of the breech E properly with that of the main barrel A, there is to the lower part of the main barrel a tongue H, on which the breech rests, and which enters a square groove in the breech plate D, and it will now be observed that the lower part I, of the breech plate extends under the whole breech, and receives the main barrel in a prong, securely, and that the guard K screws to it; the stock and breech end are secured together by the usual breech tongue and the guard. The back action lock is deemed best to use. Variations of the same.—A Flint and Steel may be used to fire the charge, the pan being where the percussion tube is. The rods C C, may screw into the ears and breech plate with right and left screws on each rod. The breech E, may have one or two chambers, a corresponding number always being in the main barrel, and when there are two a corresponding tube and lock must be on the opposite side. For other little peculiarities not explicitly described here, reference is given to the Gun. The breech E, may open either on the right or left hand rod, but the left hand deemed preferable, a pin L secures it down.

OPERATION.—The breech E is opened on its centre, charged, closed, primed, and fired, and so on successively.

Muskets, rifles, pistols and all kinds of fire arms may be constructed on this principle.—This improvement in fire arms has received the highest commendations from men of science and the most competent military judges. Mr. Hubbell has become famous as the inventor of this improvement in fire arms and the explosive concussion shell.

Next week we shall publish some remarks of the inventor in relation to the principles involved in the construction of fire arms, which will show that he is thoroughly acquainted with the subject in all its phases.

The Spike Puller.

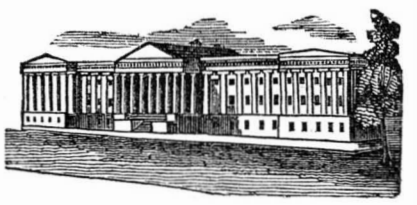


Reader, you have seen the tooth lever of the Dentist, and small though it be you have looked upon it with something akin to fear.—It is a little instrument, but mighty in power for pulling teeth out of their entrenched strong holds. But what will you say to see a tooth lever that can pull out spikes from our "leviathans of the deep" as easily—yea more so—than the dentist abstracts a refractory *molare*. Well, here is the instrument that can do it, but somewhat different from that of the dentist. The above engraving tells the whole story of its construction and application.

A, is the lever formed with an under parrot jaw which passes through and works in a slot in the jaw C, and secured to it by a strong pivot. The two jaws of the lever are now represented as drawing a spike from the block D, the back part of C, being so formed as to be a fulcrum B. The jaws are made of steel and with a very small instrument we have pulled out with great ease cut nails that were driven so far in a plank as to be considered impossible to draw at all. In repairing the hulls of vessels, it is well known that the planking has to be cut away to take out the old spikes,—a labor of no ordinary kind and distasteful to every ship carpenter. This instrument is made to pull out these spikes and obviate the necessity of cutting through the planking, only as much as to let the jaws catch the spike head. It can be made large with a lever purchase of any power, and its construction every mechanic will admit is the best adapted for the purpose set forth. It should be in all ship yards, and every house carpenter too, should have a small one.

The inventor is Mr. Patrick Bryant, of Chesterfield, Mass., a very ingenious mechanic, who has made some very valuable improvements lately on a machine for slitting hoops, veneers, &c. Measures have been taken to secure a patent.

By way of the Isthmus, it costs about $300 for a passaeg to the new El Dorado, but what of that to get where the gold grows like huckleberries.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Dec. 12, 1848.

To James Cole, of Cincinnati, Ohio, for improvement in Breaking and Kneading Dough. Patented Dec. 12, 1848.

To H. B. Masser, of Sunbury, Pa. for improvement in Cream Freezers. Patented Dec. 12, 1848.

To Daniel R. Pratt, of Worcester. Mass., for improvement in Car Couplings. Patented Dec. 12, 1848.

To Felix A. Finn, of New York City, for improvement in Chimney Caps. Patented Dec. 12, 1848.

To Victor Geroud, of New York City, for improvement in Scapements for Chronometers. Patented Dec. 12, 1848.

To Wendell Wright, of Cincinnati, Ohio, for improvement in Drawing Heads for Spinners. Patented Dec. 12, 1848.

To Nathaniel Cradit, of Ripley, Ohio, for improvement in Franklin Stoves. Patented Dec. 12, 1848.

To Ephraim Morris, of New York City, for improved Scoop and Elevator. Patented Dec. 12, 1848.

To Darius Buck, of Albany, N. Y. for improvement in Cooking Stoves. Patented Dec. 12, 1848.

To George E. Waring, of Stamford, Conn., for improvement in Parlor Stoves. Patented Dec. 12, 1848.

RE-ISSUE.

To Merwin Smith, of Meriden, Conn., for improved Table Cutlery. Patented Oct. 3, 1848—Reissued Dec. 12, 1848.

The Electric Light.

Those of our subscribers to vol 3, who remember the description of Staite's Electric Light, on page 219, and the first notice of this light published in America, will be pleased to know that the discoverer has secured an English patent for the same and introduced it in London. It was exhibited last month in Hanover Square Concert Room. and examined by the most eminent scientific men in that city. The room where it was exhibited is very large, but it was most brilliantly lighted by a single white light which exhibited all the colors and shades of the paintings which adorned the room. This is a quality not possessed by any artificial light now used for illumination—all being too yellow—and that is the reason why we cannot distinguish between a blue and a green color by gas or candle light. The patentees of this light, Messrs. Staite and Petrie, were in attendance explaining their invention. Mr. S. stated that he had rendered his electric light permanent, self regulating and economical. It possesses the remarkable property of being without heat, not combustible, and not hurtful to the eyes, and that it could be conveyed by wires like bell wires. These are indeed remarkable properties, and we are almost sceptical upon the subject.—Were it not for the authority we would be apt to disbelieve it, but there is no doubt regarding its beauty and purity. Many will think it impossible for light and heat to be separated as too many believe that heat and light are synonimous, but they are entirely different.—Mr. Paine will find that Mr. Staite has succeeded in producing results altogether different from those which can be produced by the combustion of gases. This new electrical light, it seems, is not the result of combustion, for no air is admitted to the light. All that is seen is the light in a close vase, and the wire that conveys the fluid from the voltaic battery, the circuit of which can be broken and closed at pleasure. The light of one hundred wax candles, it is said, can be furnished for two cents per hour. This is rather too loose a statement we think, but is certainly is a most wonderful discovery.

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NEW YORK, DECEMBER 23, 1848.

Poets and Inventors.

On another page will be found a beautiful article from the pen of Thomas Ewbank, in which he justly institutes a comparison between poets and inventors. The comparison is not regarding their merits or their works, but the similarity of their mental composition—the intense, the burning concentration of thought which distinguish the two in pursuit of their objects. The comparison in many respects is a correct one, although the majority of mankind are apt to suppose that inventors are mere plodding, unimpassioned, calculating beings. There never was a greater mistake. Sir David Brewster, in his Martyrs of Science, justly estimates the power and uses of imagination to the man of science in the great discoveries made by the renowned Kepler. The inventor must not only possess imagination but he must be endowed with a reasoning mind—a far greater attribute of mental strength, we believe, than to possess but the quality of ideality, and in this opinion we are backed by unquestionable authority.

In the Essays of John Sheppard there occurs the following sentence, attributed to Professor Playfair; "The physical wonders of creation far transcend the boldest and most hyperbolic imaginings of poetic minds—the reason of Newton and Galileo took a sublimer flight than the fancy of Milton and Ariosto."

Mr. Ewbanks in his article demolishes the *recent* discovery of ornamenting wood by the punching down parts of it with dies and then planing or turning the projecting wood off, and raising the depressed parts by soaking the wood in water. This invention would no doubt make some very ornamental kinds of wood work, and this reminds us of an article published in the Transactions of the Society of Arts in 1825, describing the same process as having been invented by a Mr. J. Straker. It is identical in its nature and operation with the one described in John White's collection in 1684. This shows us that there are a great many re-inventions. This is to be expected, but in cases where the re-inventor had no knowledge of a previous invention, he is entitledto as much honor. There is not a new discovery or invention, however simple, but costs the inventor much study, anxiety and labor.

Flying Machine.

Flying Machines and Perpetual Motions are very old and unfortunate acquaintances. No people have invented so many as the Germans, and many a poor fellow has lost his life by his fool hardy confidence in some machines he had invented to ride upon the winds, yet for all the accidents that have taken place to *high flyers*, from the Dutch Doctor at Ratisbone in 1692 to the unfortunate Englishman who perished a few years ago in London when descending by a parachute, there are still to be found new flying machines coming out every few months. An Austrian made quite a fine display in Cremone Gardens, London last winter, by taking several long jumps with a steam flyer. Since that we have heard no more about it, and presume it has met the fate of its illustrious predecessors. But the end of flying machines is not yet, and here we insert the description of a new and an original one certainly, taken from the Jacksonian published at Pontiac, Michigan, and sent to us *marked* for particular inspection by the author we suppose, who communicated the same to the columns of the Jacksonian. After describing how wings had been tried to beat the lark and eagle, he says:—

"As wings then, have failed, and balloons been attended with no better success, men have begun to think that the end is unattainable, and that flying is a victory which man can never achieve.

The art of flying simply consists in the suspension and motion of a heavy body in a lighter. Although this may appear contrary to the nature of things, it is what takes place every day, and is seen exemplified in the case of every insect and bird that flies—all of which are heavier than the air. A bird is a species of flying machine, heavier than the air, but moving about independently, and yet as safe and as certain to remain suspended as an inflated balloon would be. If a condor, which weighs many million times as much as a mosquito, flies with ease and rapidity, why should not some still more huge machine traverse the air with equal facility?

To accomplish the end desired, we have but to keep in view the cause of a bird's flight. It is simply this philosophical axiom—that, circumstances being the same, a greater force must overcome a less. If the weight of a bird be as 1, and its mechanical appliance for counteraction be as 2, the bird will rise from the earth when its powers are exerted. Herein is all the mystery of flying; and if a bird or machine weigh ten tons, and have mechanical apparatus for acting upon the air with a power of twenty tons, the machine must certainly rise. This is the only condition requisite, and so long as it is kept in view, and the resistance of the air in bodies of different velocities ascertained, the capability of heavy bodies to fly may be made a subject of mathematical certainty.

In regard to power, taken in connection with the space occupied, there is no form of artificial wing equal to the screw or propeller wheel. While the wings of a bird alternately draw in and strike out, the power of a screw is constant and unvarying. The power with which a given diameter of screw wheel, making a certain number of revolutions per minute, will act upon the air, can easily be determined by experiment, and the elevating force of any number of wheels can thus be ascertained. Having accomplished this, we shall know exactly how much weight can be raised, and can construct and load our machine accordingly.

Let us suppose a machine to be constructed resembling a long railway car, with arms projecting at certain distances from the roof and floor, appearing like the long axles of a wagon wheel. At the extremities of these arms the axles of the screw wheels or wings are inserted, which thus work parallel to the earth, instead of perpendicular, as in a vessel. At the stern of the car are from two to four wheels, to serve as propellers, the side wheels being merely to elevate and suspend the car. In the interior of the car, at the centre, is the steam engine, with the fuel and water, while the extremities are reserved for passengers and baggage. The wings are moved by independent bands connected with the internal machinery, so that the whole or a portion of them may be used at once, for the convenience of ascending and descending.

Unlike the heavy railway car, the frame should be constructed of wrought iron, and the roof, sides and floor be covered with thin sheet iron or copper, suitably supported by light frame work where necessary. The wheel wings should be constructed in the same manner—strength combined with lightness being always kept in view. Steam engines are now constructed of great lightness and power, and we have not arrived at the precise epoch when the great feat of navigating the air can be accomplished." Aha!

"This machine instead of having two wings like a bird, will have from four to twelve, according to the length. The forward end should be built sharp, to offer less resistance to the wind. Having more wheels than are necessary to its elevation, no danger can occur from any accident that may occur to one or two of them. The machine can be guided by some kind of rudder, or by stopping one or two of the stern wheels, which are attached to each side of the stern.

At first sight, such a machine as this may appear the production of a visionary, but the same would have been said fifty years since had any man described a locomotive engine and a railway. Every step towards the construction of this machine can be based on mathematical principles The air furnishes a vast fund of power for the use of mankind, although as yet they have only used it to propel ships and wind-mills. We live in an age of great discoveries and improvements, and among these will certainly be ranked the navigation of the air. The most distant voyages, overland may be accomplished with expedition and little cost by these machines, all that is necessary being wood and water, which are abundant on this continent.

A car forty feet long, with five wheels on each side, eight feet in diameter and three smaller propellers at the stern, would certainly appear a novel object, when roaring along through the air. If a certain breadth of wheel be not sufficient, try broader ones—if the velocity be too slow, increase it. Let those who have capital and science devote their mite to the cause, and a great victory will be accomplished."

We must say that we have not a mite to contribute to this cause, as we think that the comparison between the musquito and condor is altogether in favor of the former, and beside the art of flying by "the mechanical appliances for counteraction" as explained, is altogether different from our notion. Every artificial object that can float in the atmosphere must be lighter than its bulk of the atmosphere, let the mechanical appliances be as curious as they may, and beside the law in this respect is, that bodies according to their greater lightness than the atmosphere will only ascend in proportion to their magnitudes, that to the cube of their diameters, and this minus of your coal and all such terra firma gimcracks. We would greatly have preferred the paddle wheel to the screw, in the atmosphere, as we certainly do for navigating the Atlantic or Hudson, being fearful that if we tried the propeller on an ærial voyage, we might get into a worse place and get some harder knocks than the Great Britain in Dundrum Bay. We however wish the inventor success—but before he proceeds to construct his machine we hope he won't forget the law that was discovered by the great Newton in the falling of an apple.

Perpetual Motion.

There are some men who pursue this subject with wonderful perseverance, and tenacity of purpose. This passion is not confined to the ignorant, as too many sternly practical men are apt to suppose but it is pursued by many men of much erudition and scientific attainment. We do not despise such labor, we admire the enthusiasm that can pursue a subject with unabated zeal from day to day and from year to year, as when the gifted Boyle made it his study for many long years, and if we have but little hopes of it ever being accomplished, still, we cannot sneer at those on whose minds it has become

"The star of hope that shines alone
To cheer their mental burning zone."

It is not long since that a gentleman named Ritchter in Madison Co. Geo., constructed a machine which his neighbors considered to be the *finale* of perpetual motion, and they had a grand demonstration says the Family Visitor in honor of the inventor, with a display of fire works and shouting aloud "long life to Charles W. Ritchter the inventor of perpetual motion." No man who is acquainted with the principles of Mechanics, the composition of forces and the law of gravity, can see any hope, indeed there is none, for any machine propelling itself by mere mechanical force. "It is not easy to tell what may yet be done by the application of electricity as a motive power, but all the motive power worth speaking of that has yet been derived from electricity, has been by the voltaic battery, and consequently it was a chemical as well as mechanical combination." There have been so many machines invented of a perpetual motion character, "which have sunk to rise no more" that the public has become somewhat quizzical upon the subject and not until a perpetual motion full, complete and applicable to useful purposes, is exhibited and in operation for years, will the public believe that such a thing has been accomplished, and it will be long before we see this, that is as a propelling power for large machines; as applied to clock work, the electric clock is as near an approach to perpetual motion as we require, but those who think to create a perpetual motion by the expansion, and contraction of fluids, by the heat and cold of the atmosphere—accumulating and dispensing power thereby, have never given the subject a complete examination, nor persued the experiments of Perkins and yet there are many who suppose that by this means they will yet discover the grand unknown. It is but a few weeks since we had a communication on this very way of making a perpetual motion. To those of our friends who are looking to the same means to accomplish this object, we can only quote Ephesians chap. 2, v. 10, "No hope."

To electric science alone can we look with any hope for a perpetual and powerful motive power—and we confess that our hopes are weak.

Patent Case.

On the 15th inst. before Judge Kane, in the U. S. Circuit Court Philadelphia, was tried a case for the infringement of a patent for alleged improvements in machinery for breaking and screening coal. The complainant was Mr. Battin, defendant Mr. Clayton. This was a trial in which much interest was felt in the mining districts.

This case was on trial about six months ago and the new trial was granted at the instance of the plaintiff, who asked leave to change the pleadings. Upon the first occasion the claim made was to "a combination" of two known machines, (a pair of breaking rollers and a circular screen) by which a certain result was done in one movement that had heretofore been done by two movements. This, the Court ruled, is not patentable.

On the present trial the plaintiff varied his claim from the combination of rollers and screen, and claimed for a new mode of arranging the breaking rollers, "so that the teeth of one shall work into the spaces between the teeth of the other."

The Judge ruled that as this alleged improvement produces no new result, it is also not patentable.

The plaintiff then declined going on, and a nonsuit was entered, by agreement, of the following nature.

And now, Dec. 15th, 1848, nonsuit is entered, the Court reserving for consideration upon a motion to take off the nonsuit, the several points ruled during the trial with leave to the plaintiffs, (if the Court refuse to take it off) to elect either that the nonsuit shall stand or that a verdict be entered for the defendants as if the jury had found such verdict, in order that the plaintiffs may have the benefit of their bills of exceptions, which are now tendered by them and sealed by the Court to the several rulings and decisions of the Court during the trial; so that the opinion of the Supreme Court in error may be had thereon in like manner as if there had been no nonsuit.

American Iron.

Birmingham in Missouri, is said by H. King M. D., Geologist, to possess great advantages for the manufacture of pig iron. The iron ore is abundant and so is the best cannel coal which can be delivered for three cents per bushel, it is so easily mined. It is estimated that iron can be manufactured there for at least $10 per ton less than the foreign. It will no doubt be some time before they can do this. The grand facilities for the manufacture of iron are, coal, iron ore, and lime lying in the bosom of one another, as is the case in the iron districts of England.

Coal in Massachusetts.

It is reported that a coal bed has been discovered in the town of Weston, Middlesex Co. Mass. In digging a trench pieces of coal were thrown up, which upon examination proved to be bituminous, burning as freely as Cannel coal.

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Woodworth's Planing Machine.

(Concluded from our last.)

I may add, that my own very carefnl examination of different inventions, that are supposed to interfere with Woodworth's has not led me to a different conclusion from that which a proper judicial comity invites me to adopt.

3. The only remaining question is that which regards the substantial identity of the machine used by the defendants with that patented by Woodworth

The patent of Woodworth, as defined in his amended specification is for a machine, capable of performing the operations of planing, tongueing, and grooving, at one and the same time, but which admits of their being performed separately. It consists essentially of two parts or systems; one for planing or smoothing the surface ; the other for fashioning the tongue and groove upon the edges. The apparatus for feeding the machine, and the rollers by which the elastic material is held firm while undergoing its action are subsidiary to these.

I shall consider the two systems of machinery in succession.

1. The planing machine.

A practically smooth surface may be given to plank or other substances, by the application of either of three forms of tool :—the chisel, which, with a guage to regulate its action, becomes the ordinary plane; the drawing-knife, which with a simular guage, forms the spoke-shaves ; and the adz. Each of these has its appropriate or characteristic motion ; though by the ingenuity of the workman, the motion of either of them can be modified so as to approach that of another.

The chisel, when in the form of the plane, has its blade fixed at an acute angle with the surface to be reduced, and works parallel to that surface, the edge cutting generally at right angles.

The guaged drawing-knife differs from the plane in this : that by means of two handles, its edge can be made to cut obliquely, or at right angles, at the pleasure of the workman Its general motion is parallel to the surface; though, being more under control of the hand and having its blade sometimes slightly arched, it may be made to deviate upwards or downwards, with a varying angle, or in a curve.

The adz has an arched edge, and cuts only in curves : level surface being attained proximately by a succession of such cuts. The plane and drawing-knife operate by shaving the surface, the adz by chipping.

The chisel-plane was combined with apparatus for giving it motion and direction, in the machines of Bentham, in 1791, Bramah, in 1802, and Muir of Glasgow, in 1827. In the first and the last of these, the character and direction of the motion were those of the same tool when worked by hand. In Bramah's the planing-blades or irons were fixed upon a revolving disc ; the character of the motion thus become circular, but still continning to be parallel with the surface.

The planing machine of Woodworth, though it uses knives or cutters resembling plane-irons in form, is essentially a series of adzes. These are attached to the outside of a cylinder to lines either parallel or oblique to its axis ; and as the cylinder revolves, they cut with an adz-like or dubbing motion ; the knife which is parallel to the axis, presenting its whole edge to the plank at the same moment, and in this respect cutting like the plane ; the knife which is oblique or in the helix form, presenting the parts of the edge in succession, and in this respect cutting like the drawing-knife : but both forms of knife cutting in vertical curves like the adz, not in plain surfaces like the chisel plane, and its combinations by Bentham, Bramah and Muir.

Regarding then the Woodworth machine as substantially different from the three last mentioned I find the substantial difference to consist in this, that they act in planes parallel to the surfacs to be removed, Woodworth's in vertical curves ; that theirs produce an absolutely level surface ; his a surface apparently level, but in fact corrugated or grooved.

2. The tongueing and grooving machine.

The idea of tongueing and grooving by modification of the circular saw is at least as old as 1394, when it was described by General Bentham, from whom Muir copied his machine many years after. The specification of the two concur in describing a thick revolving saw or cutter to make the groove, and two wheel-saws set at right angles with each other on each side the plank making four in all, to cut the rebates of the tongue. The machine of Woodworth is an improvement on these, by substituting a single firm cutting wheel for the four circular tongueing-saws, and combining this with the equally firm grooving cutter on the other edge of the plank to reduce it to an exactly equal width throughout.

I do not see an essential difference between the grooving cutter in this machine, and the circular saw or cutter described by Bentham and Muir. But their tongueing apparatus is clearly not the same as Woodworth's ; and I doubt very much whether the tongueing and grooving could be practically combined in their machines with the same effect as they are in his ; they certainly are not.

These two systems of machinery, the planing, and the tongueing and grooving, seem to me to constitute the essential, and only essential parts of the Woodworth improvement.—The amended specification claims them, in the several combinations of which they are susceptible, as follows :

1. The employment of those planes, in combination with the subsidiary rollers, or any analogous device :

2. The combination of those planes with the tongueing and grooving wheels.

3. The combination of the tongueing and grooving apparatus.

4. The combination of either the tongueing or grooving wheels with the rollers, which by their pressure hold the plank steadily in its place.

Having thus analyzed the patent right under which the complainants claim, it remains to determine whether the machine used by the defendants is in part or in whole substantially the same.

And 1. Of the planing machine.

It is apparent, that so soon as a planing machine, having a general resemblance to the revolving disc of Bramah, ceases to operate in an absolutely plane surface, it loses one of the characteristics of his machine.

On the other hand, it is clear that a machine, sensibly like Woodworth's, may not exactly conform in its structure to the rigid definition of a cylinder. The smallest change of diameter between the two ends of the revolver, on which the planing knives are placed, would convert the cylinder in the frustrum of a cone ; and a corresponding inclination of the axis of motion, or a corresponding adjustment of the plank to be acted on, would make the machines operate as well, or nearly as well, as if the exact character of the cylinder had been retained.

Yet, just in proportion as the sides of the Woodworth revolver approximate to a cone, the machine approaches the planing disc of Bramah. It ceases to cut as the adz merely, but takes in some degree the characteristic action of the chisel plane or of the drawing knife.

So too, when you give a dished form to the disc of Bramah, thus converting the disc into a cone, you lose in part the characteristic action of the chisel plane and drawing knife, and introduce in the same degree the appropriate motion of the adz.

This deviation from the strict form of the Woodworth machine towards that of the Bramah, or from the Bramah towards the Woodworth, may go on increasing, till the appropriate action of the original machine effectively disappears ; the cylinder, by a series of progressive changes, having lost itself in the disc, or the disc in the cylinder. It is impossible to define, for the practical objects of a judicial decree, that angle or degree of deviation at which one of these geometric forms shall be said to pass into the other.

Between the two machines then, the Bramah, unprotected by patent in this country, which cuts parallel to the surface with a planing motion, and the Woodworth, which cuts with the dubbing action of the adz,—where is the line of separation ? Obviously, it is at the point of the first deviation from the free machine to that of which the use is prohibited.

Turning now to the machine used by the defendents, we find it to be a revolving cone, its axis or spindle so arranged as that the tangent plane of its curve shall coincide with the surface to be made smooth. It partakes of the disc character, and cuts as the drawing knife and chisel plane also ; but just so far as it varies from the simple disc of Bramah, it embraces the principle of Woodworth's machine, by involving the dubbing action of the adz. It cuts as the drawing knife and the plane, while approaching the point at which the knives act upon the finished surface, and its cutters continue to revolve with a similar motion after passing that point ; but at the effective moment, it is not the plane or the draw knife, but the adz cut, that finishes the work.

Much stress has been laid upon the fact that the knives in the defendents' machine are not in the lines of the radius, but have a certain obliquity, which brings one part of the edge in contact with the board before the rest, and gives a sloping or drawing action, not unlike that of the pocket knife while cutting a stick. But I see nothing in this action or arrangement, to distinguish it in principle or substance from that of the Woodworth rotary cutter, when placed in the oblique line of the helix. Whether it be the knife, that moves in part lengthwise during its revolutions, presenting the points of its edge to the board in succession, or the board, which moving onwards, presents its face to the several points in succession of the knife edge, or whether the action results from the combined action of the two, the machine and its mode of operation are substantially the same.

I am therefore of opinion that the planing machine of the defendants is an infringement of the complainant's patent-right.

2. As to the tongueing and grooving machine.

This part of the machine in use by the defendants does not vary sensibly in form or character from the tongueing and grooving apparatus claimed by Woodworth. Until his patent shall be invalidated, he has a right to claim of this court the protection of its restraining process in regard to this also.

It is my duty therefore, to grant the full injunction as prayed for. In doing so, I am not sensible to that which was so ably pressed in argument, that if I am in error, the respondents may be seriously prejudiced. But the court can seldom encounter a case, that does not involve a simlar responsibility for consequences. To withhold judicial action is not to escape from this. The right of a party to the most speedy and effectual protection against a meditated wrong, is as complete as his right to redress for wrongs already inflicted : and the accident of position confers no right on one party, whether he be plantiff or defendant, at the expense of the other. The special injunction of equity, like the arrest on mesne process of the law, may be abused to the injury of an opponent ; but it is no less on that account the duty of the judge, to further them both, when in the exercise of his best discretion, he believes that they are called for by the merits and the exigency.

This is a case of ancient and highly important patent-right. It has been contested at law and in equity with an eagerness and pertinacity proportioned to its value. Yet during the lifetime of the inventor, eleven years, it was "never successfully impeached." (Story, J., in Washbourn v. Gould) Since his death numerous questions have been raised as to the title of his administrator under the renewal of the patent, which were only settled by the Supreme Court within the present year. It is under the decision of that tribunal, in the case of Wilson v. Rousseau, that the claimants assert their right to come before this court as parties in interest

They have lost no time. The decision at Washington was made in March, and they filed their bill in April. The motion for an injunction, argued before my predecessor in office, and left decided by his death, was brought to my notice on that day I first took my seat on the bench. There is here no acquiesence, no laches ; but on the contrary, all promptness and vigilance.

I accordingly direct a special injunction to issue according to the prayer of the bill, and to remain until the hearing of the cause, or the further order of this court.

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(To be continued.)

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Last Moments of two Great Men of Science.

When the Roman army had at length become masters of Syracuse by stratagem, which the tactics of that consummate engineer, Archimedes, prevented them from taking by force, he was shut up in his closet, and so intent on geometrical demonstration, that he was equally insensible to the shouts of the victors or the outcries of the vanquished. He was calmly drawing the lines of a diagram when a soldier abruptly entered his room and clapt a sword to his breast. "Hold friend," said Archimides, "one moment and my demonstration will be finished." The soldier, surprised at this unconcern at a time of such extreme peril, resolved to carry him to Marcellus ; but as the philosopher put under his arm a small box full of spheres, dials, and other instruments, the soldier, thinking the box to be filled with diamonds, could not resist the temptation, and therefore killed him on the spot.

It is related of the celebrated French chemist, Lavoisier, that when he was condemned to death by Robespierre, he requested fourteen days, in order to mature some important discovery ; but the monster refused the boom, and sent him to the guillotine.

First Discovery of the California Gold Mine.

From an article in Harper's forth-coming Biographical Cyclopedia, we learn that the gold mines of California were first discovered by the Jesuits, about the middle of the last century. The Jesuits concealed their discovery from the Government and the suspicion that they had done so perhaps had something to do with their expulsion from Mexico. In 1769, Don Jose Galvez, Marquis of Sonora, undertook an expedition into California to ascertain the truth of the reports respecting the gold, " in the rivers, in the soil, and in the rocks " He was accompanied by the celebrated Don Miguel Jose de Arenza, who, discouraged by the fruitless search of a few weeks, recommended the abandonment of the enterprise, and for contending that the Marquis was insane for proceeding, was thrown into prison where he remained several months. Nothing at all satisfactory, however, appears to have resulted from the search of Galvez : though the Jesuits afterwards disclosed, in Spain and in France, that the charges of discovery and concealment made against them, were true.

Indian Bread.

Take half a dozen eggs beaten, one quart of milk with a little sugar—the amount being regulated by the taste—mix the eggs and meal together first, then put in the milk. The quantity of meal will be regulated by the consistency desired, shorten with butter and mix in a little salæratus. Grease the pan in which it is baked.

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"C. B. D. of Ohio."—Why have you not returned those specifications? The models of both your inventions have been forwarded to Washington, and as soon as your papers are returned to us we will forward them also.—Please send them along.

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"W. H. S of N. Y."—Your model and the Patent fee were received last Monday. We have not had an opportunity to examine your invention yet, but will give it attention in a few days.

"M. J. H. of Md."—The drawing of your apparatus and the description you sent us are very ably executed. Atmospheric engines have been long in use and the construction of your plan embraces nothing new. We should not advise you to incur much expense in experimenting with it and certainly should not advise you to attempt to get a foreign patent upon it.

H. S. of Pa."—The japan for iron was published in vol. 3 Scientific American, in our articles on japan work. Every mechanic should have them. There is no new process of tinning iron. There is galvanized iron (iron covered with zinc) which is accomplished as in the old process of tinning.

"N. G. of N. Y."—You will perceive in the engraving in the Scientific American last week that the same principle of your trucks was fully embraced. In reference to the paddle wheel, we did not recommend it. We have our objections. The principle of the crank for keeping the paddles vertical is good—you are correct—and there is a patent now in existence for the invention. It is called "Morgan's Paddle Wheel."

"J. P. B. of Boston."—It is not in our power to give you the required information respecting where any needle makers now are in the United States. We would have been glad to have given you the information.

"H. P. of Worcester, Msss."—We have received your letter, but rather too late for insertion this week. We will give it a place in our next number.

"P. B. of Del."—It will be a troublesome job to correct your papers so that the Commissioner will grant you a Patent. We had much rather have made them out entirely anew than to try to correct those you have sent to us. The drawings too we should consider as insufficient, but as no objection was made to them at the Patent Office we suppose they will answer the purpose. Send us $10 more.

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Slave Labor in Factories.

The proprietor of the factory at Tuscaloosa Ala., makes a calculation in one of the Southern papers to show that, if the Eastern factories can make cloth at ten cents per yard, he can make it at 8½ cents. This factory is worked by slave labor, and another is in progress in Tuscaloosa county, also to be worked entirely by slaves, which will run a thousand sp indles.

The New York and New Haven Railroad is so near completed that a train of cars passed over the whole route on Thursday the 21st, and will run regular trains after Monday the 25th inst.

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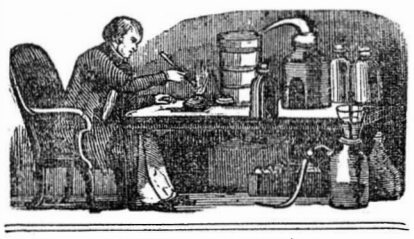


For the Scientific American.

New Chemical Law.

No. 14.

It has been remarked that oxygen gas in uniting with other substances, bears a strong resemblance to chlorine, bromine and iodine, and like them, possesses strong electro-negative qualities, but it cannot belong to the same aggregated series with these substances, since the chemical properties of its compounds are different. Thus oxygen in uniting with hydrogen, should form a gaseous hydracid similar to the hydrochloric, hydrobromic &c. acids, did it belong to the same aggregated series: but we find instead of producing a gaseous hydracid, water is the result, which being a liquid is contrary to the requirements of the law, and therefore removes all possibility of its belonging to the above mentioned class.—But if it cannot be considered as belonging to the above mentioned class; its manner of union seems to indicate that it may be a compound of that series. By comparing the chemical properties of oxygen with the chemical properties of the compound of chlorine, bromine and iodine, we may discover a compound of known composition, from which by analogy we may be enabled to arrive at the true composition of oxygen. To what compounds then of chlorine, bromine and iodine is it similar?

It is well known that oxygen gas was formerly considered the only acidifying principle in existence, and that the presence of oxygen was necessary for the formation of any acid whatever. This is now known to be an error, since perfect acids can be formed without the least particle of oxygen entering into their composition. The hydrogen acids of chlorine, bromine and iodine are examples of the existence of acids containing not the least particle of oxygen. May we not consider this acidifying power as derived from one source and thus claim hydrogen the only acidifying principle in existence, oxygen an hydracid, and similar in the form of its composition to any of the hydracids. This view gives a satisfactory explanation of the form of its composition, and although oxygen possesses not the least taste of an acid, yet this may be ascribed to the fact that in the series it is so far situated from any other of the hydracids, as to differ in its tasting properties. Thus nitrogen is tasteless but the same cannot be said of the remaining substances in that class, viz. chlorine, bromine and iodine. If oxygen be an hydracid with an atomic weight of 8, the radical which has united with hydrogen to form it, must evidently possess an atomic weight of 7. Now according to the properties of this series this radical must be one of its substances, and since it possesses an atomic weight of 7, it must be the radical which by its aggregation forms nitrogen, chlorine, bromine and iodine. It must possess an intense affinity for hydrogen and it is probably for this reason that oxygen has never been decomposed. This is the only satisfactory way of accounting for its composition by this law, and is a result flowing from its direct application. As it must be a chemical compound, some future attempt at its decomposition may prove effectual. It is at least worthy of the trial, for there is probably no substance which plays a more important part in the operations of nature than oxygen; a true knowledge of its composition is therefore much to be desired. There is another substance included in the present list of the elements which must be also considered as a chemical compound and the products of a chemical union, namely, fluorine. This substance in its chemical properties closely resembles chlorine, bromine and iodine, but an examination of its compounds removes the idea of similarity. To what substance then is it similar?

If we examine the similar cyanides, or these cyanides which have the same form of composition as the fluorides, we can perceive a close similarity in their chemical properties. If upon this ground we consider fluorine possessing a form of composition similar to cyanogen, we will have the following compound hydracids.

Hydrofluoric Acid C2R+H. specific gravity 1.0609, boiling point 58°. liquid.

Hydrocyanic Acid C2 2R+H. specific gravity .6969, boiling point 80°. liquid.

Where R. represents the radical of the nitrogen, chlorine, bromine and iodine family, and 2R represents nitrogen, fluorine should therefore possess an atomic weight of 12.+7, that is 19. These statements are supported by theoretical evidence and may therefore be false, too much dependence must not therefore be placed in them, although there exists greater reason for the belief in the compound nature of oxygen, than in the compound nature of fluorine.

S. N.

Bridgeport, Conn.

To Measure the force of Pressure.

If we take a leaden bullet of any determinate diameter, and expose it to pressure between plates of harder metal made to approach each other in a parallel position, the bullet will be compressed or flattened on the opposite sides in an equal degree; provided the lead is pure, the degree of compression will indicate the amount of pressure. With a graduated press of the lever kind, it will be easy to form a scale of pressure corresponding to the different degrees of compression until the ball is reduced to a flat circular plate of about one-fifth of an inch in thickness, and it will be found that an ordinary bullet of about five-eighths of an inch diameter will require a pressure of near 4000 pounds, to effect this degree of flattening. Suppose, therefore, we wish to measure an actual pressure estimated to be nearly 20 tons, we have only occasion to place ten or twelve of these balls at a proper distance asunder, so as not to be in contact when expanded, and afterwards add into one sum the particular pressure due to each ball from the scale first made, by using the lever press before mentioned. By this mode Mr. Bevan ascertained the amount of friction of an iron screw press with rectangular threads, to be from three-fourths to four-fifths of the power applied: or the actual pressure has not exceeded four of five tons when the calculated pressure, if there had been no friction, would have been 20 tons. The larger the ball, the greater will be the pressure necessary to reduce it to a given thickness. An ordinary leaden shot, of one-eight of an inch diameter will require nearly 100 pounds to compress it to a flat plate. By using a ball of five-eights of an inch diameter, Mr. B. found the actual pressure of the common bench vice to be above ten tons when under the same force; if there had been no friction, the pressure would have been eight tons. In the practical application of these balls, it will be convenient to make a small impression upon them with a hammer, before they are placed between the plates, to prevent them from rolling out of their proper position; this operation will not be found to interfere with the result, as it is the ultimate compression only that is sought and which is not affected by that of a smaller degree before impressed. This property will also be found very convenient, for the same substance may be used several times, by taking care that each succeeding pressure exceeds that of the proceeding. The application of these leaden balls to determine the actual pressure, will not interfere with the regular operation of the press at the same time the balls are used, which of course must be placed between separate plates.

Treatment of the Cholera in Russia.

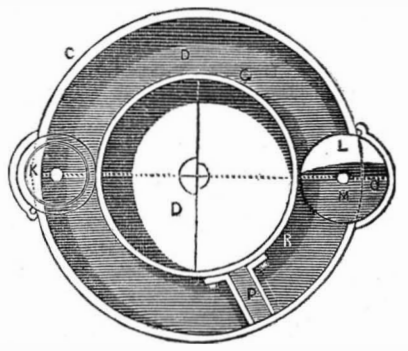
A gentleman in Russia writes that he has upwards of 300 people at work and the cholera all around him; 60 of his people were taken ill and he called them together and explained the symptoms, which are a loss of appetite, a heaviness, and a disagreeable sensation at the pit of stomach. He then administered to those who were seized one glass and a half of spirit of wine in a glass of water, with four or five teaspoonsful of powdered charcoal, and three drops of oil of mint, and the patient took violent exercise until a strong perspiration was induced, and all recovered; those who were weakly he admistered the charcoal to in a fresh egg beat up with a little water, milk warm.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

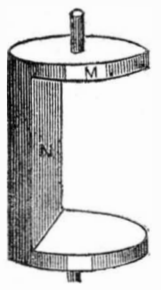
FLINT'S ROTARY ENGINE.

FIG. 25.



This is an engine patented in England in 1805, by Mr. Andrew Flint. C, fig. 25, is an outer cylinder of cast iron. D, is the bottom plate of the same. G, is the inner cylinder, hollow and divided by a partition. The two cylinders C G, must be turned very true and placed exactly concentrically. A hollow central shaft is cast in one piece with G, forming an axis. K and L, are two valves consisting of a top and bottom plate, M M, as seen in

FIG. 26.



connected by a portion of solid cylinder N.—The plates M, are sunk into the plates D, so as to be flush with their inner surfaces, and the connecting piece N, lies in and fills the cavity prepared for its reception in the outer cylinder C, at O, and thus completes the inner surface of the same. P, is a steam float firmly attached to the cylinder G, and revolving with it through the circular passage left between the two cylinders, which passing it accurately closes by means of a packing of hemp and tallow. The several parts must be well packed to prevent leakage, and this has been and always will be the great difficulty attending rotary engines. This is owing to their form. There is a circular groove R, sunk in the inner surface of the plates D, concentrical to the axis of the cylinder G, and the valves K and L respectively. In this groove is placed a metal packing ring fitted with packing against which the surfaces of the said plates G K, and L work. This packing is regulated to any degree of tightness by screws passing through the cover of the cylinder. The steam is admitted to the lower division of G, and passing through the aperture before L, it acts upon P with a power proportioned to its elasticity and the area of P, and thus forces it round till it passes the valve K when it passes through the small aperture seen there, and from there it is passed to the upper division of G, and by a winding passage it is, according to the specification, made to pass into the hollow axis, to get the reaction force of the steam. It is but a very poor engine indeed. The reaction force of the steam is a very great blunder in some mechanical contrivances. Whatever "reactive force" of steam as they call it, is endeavored to be employed, it is so much *reaction* loss, that is all. Steam is not water—this should not be forgotten. It is a combination of a certain amount of caloric with water which gives the water new powers and new principles. Mr. Flint's rotary never made his fortune, and it now operates only on print, a beacon to warn the youthful mechanical navigator from getting wrecked on a sand bank.

Spear Practice of the Hawaiians.

"They were peculiarly expert," says a recent voyager to Isles of the Pacific, "in the hurling of the spear and miraculously so in avoiding of it when hurled against themselves. To this practice they were systematically trained; and even now, after peace has continued nearly fifty years, and civilization has substituted its own weapons for those of barbarism, the officers of the fort, who were always happy to entertain us with specimens of their native warfare, perfectly astonished us with their dexterity in the management of the spear. One stood to be aimed at, while several others, at a distance of about twenty paces, rapidly darted against him the long spears of ancient times with such vigor and certainty, that their comrade, who acted as their common butt, could be saved by nothing but his own coolness and agility. But he was apparently as much at his ease as if he had been Gulliver among the Lilliputians. Some of the weapons he would send flying off at an angle by touching them with his shoulder, or leg, or arm. Others he would catch by the middle and hurl back at the throwers, thus directly turning the tables on the enemy. One or two he might perhaps clutch between his arm and side, and, at all events, even when a special display of skill was impracticable, he would still dodge the mischief by a slight inclination on his body. In this apparently dangerous pastime Kamehameha was rather fond of exposing his royal person; and when urged to be more careful of his valuable life he replied, that it was as easy for him to avoid the spears as it was for his antagonists to throw them."

The Ice Trade.

Since January last there have been exported from Boston 55,522 tons of ice, an increase over last year of 8,170 tons. The great success of the Bostonians at the East in supplying more Southern sections with ice has aroused speculation in the same article on the Northwestern lakes. A large temporary building was erected last year on the banks of Lake Huron, and about 3000 tons of a pure article was secured. During the past summer this ice was shipped to Cincinnati, and sold in that market from $30 to $60 per ton. A company is now forming in Cincinnati with a capital of $50,000, for the purpose of supplying New Orleans with the article, by the way of the Illinois Canal and River. It is the intention of the company to build flat boats and send them direct through to New Orleans without unloading. The ice of Detroit River and Lake Huron is of a quality not surpassed any where in the country.

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